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Intravaginal Cleansing among Women Attending a Sexually Transmitted Infection Clinic in Kingston, Jamaica

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Abstract

Objectives—Although common worldwide, intravaginal cleansing is associated with poor health outcomes. We sought to describe intravaginal cleansing among women attending a sexually transmitted infection (STI) clinic in Jamaica.

Methods—We examined intravaginal cleansing ("washing up inside the vagina", douching, and products or materials used) among 293 participants in a randomized trial of counselling messages at an STI clinic in Kingston. We focussed on information on intravaginal cleansing performed in the 30 days and three days preceding their baseline study visit. We describe reported cleansing behaviours and used logistic regression to identify correlates of intravaginal cleansing.

Results—Fifty-eight per cent of participants reported intravaginal cleansing in the previous 30 days, and 46% did so in the three days before baseline. Among those who cleansed in the previous 30 days, 88% reported doing so for hygiene unrelated to sex, and three-fourths reported generally doing so more than once per day. Soap (usually with water) and water alone were the most common products used for washing; commercial douches or detergents were reported infrequently. Intravaginal cleansing in the three days before the baseline visit was positively associated with having more than one sex partner in the previous three months (adjusted odds ratio [AOR], 1.9; 95% CI, 1.1, 3.2), and negatively associated with experiencing itching in the genital area at baseline (AOR, 0.6; 95% CI, 0.4, 1.0).

Conclusions—A large proportion of women attending STI clinics in Jamaica engage in frequent intravaginal cleansing, indicating a need for clinicians to discuss this topic with them accordingly.

Keywords

Intravaginal cleansing; Jamaica; KAP; sexually transmitted infections

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INTRODUCTION

Worldwide, women engage in a range of vaginal practices, including external and internal cleansing and insertion of products and materials, to promote hygiene and improve sexual health. Recent multi-national studies have highlighted both the high prevalence of these behaviours as well as variation in the type of practices, the reasons women engage in them, and the characteristics of women who engage in them (1–6). A consistent theme in these study results is that many women engage in vaginal practices as a means of managing vaginal attributes such as odour, cleanliness, and lubrication in accordance with their beliefs and preferences.

The positive value many women place on vaginal practices is at odds with the heightened medical concern about intravaginal cleansing and related behaviours. Mounting evidence suggests that douching, in particular, can negatively affect women's health. Recent studies substantiate associations between douching and an increased risk of infection of HIV and other sexually transmitted infections (STI), and the presence of bacterial vaginosis [BV] (2, 7–10). Douching has also been associated with preterm birth, ectopic pregnancy and endometritis (11, 12). While more research is needed to conclusively demonstrate many of the putative effects of douching and related behaviours, there is agreement among many in the medical field that douching confers no health benefit and should be discouraged (9, 11, 13, 14).

According to recent estimates, the prevalence of HIV was 1.6% among all adults in Jamaica, 4.5% among female sex-workers, and 31%among men who have sex with men (15, 16). In addition, Jamaica has a relatively high prevalence of other STIs (15, 17, 18). However, there is limited information on intravaginal cleansing and related behaviours in Jamaica, to inform healthcare providers about what to expect from their female clients in this regard and whether intravaginal cleansing may be contributing to poor health outcomes. Thus, based on a sample of women attending an STI clinic in Kingston, Jamaica, we describe the prevalence of recent intravaginal cleansing, reasons and materials used for cleansing. We also assess the relationship between cleansing and select patient sociodemographic and reproductive health characteristics.

SUBJECTS AND METHODS

This study utilized data from the *Assessing Counseling Messages Effectiveness* (ACME) trial, the details of which have been published elsewhere (19). Briefly, ACME involved 300 women aged ≥ 18 years, who attended a public STI clinic in Kingston, Jamaica, from August 2010 to March 2011. At the baseline visit, enrolled women were randomized to receive one of two counselling messages during the period of syndromic treatment for STI or reproductive tract infections (RTIs): 1) a single message promoting short-term abstinence only or 2) a hierarchical message promoting abstinence as the primary strategy, backed up by the promotion and provision of condoms. They were asked to return to the clinic in approximately six days for follow-up. At baseline and follow-up visits, women were administered questionnaires, seen by a provider, and tested for STIs and prostate-specific antigen (PSA), a biomarker for semen exposure and the primary outcome for the main study.

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The ACME protocol was approved by the Centers for Disease Control and the Ethics Committee of the Ministry of Health, Jamaica.

This study uses information that women provided on intravaginal cleansing in the baseline and follow-up questionnaires. The baseline questionnaire included questions about engaging in intravaginal cleansing (specifically, "washed up inside the vagina or douched") in the previous 30 days, as well as the frequency of cleansing, reasons for cleansing, and what was usually used for cleansing. Both questionnaires also included a slightly different question regarding each of the prior three days: *"Did you insert anything inside your vagina for washing up, lubrication, menses or for any other reason?"* We chose to focus on the baseline data since the cleansing data reported at the follow-up visit included both general cleansing behaviours and behaviours related to STI/RTI treatments (*eg* vaginal creams or suppositories) given to participants at the baseline visit. The surveys also included questions about their STI/RTI symptoms, sexual activity, and sociodemographic characteristics.

We present descriptive statistics about intravaginal cleansing during the two time periods reported at the baseline visit and an exploratory analysis to identify correlates associated with intravaginal cleansing behaviours in the three days before the baseline visit. For that analysis, we included correlates used in previous studies of intravaginal cleansing that relate to demographic characteristics, STI/RTI symptoms, and sexual/reproductive histories, including contraceptive use [Table 1] (20–25). Categorical response cut-offs were derived initially from data distributions and checked for robustness. We did not include menstrual status because only eight (3%) reported menstruating at the baseline visit. We also assessed parity and any hormonal contraceptive use, but these yielded no associations and were similar to other variables assessed (*ie* age and injectable contraceptive use). We used Pearson Chi-square tests to assess bivariate differences by the potential correlates in intravaginal cleansing in the three days preceding the baseline visit. We then assessed multivariable associations with all variables that were related to cleansing in bivariate tests (at a $p < = 0.20$ level) and potential control variables, such as education and age. The final model included those whose estimates were statistically significant (at $p < = 0.01$ level) and robust in size and direction to the presence of other included measures.

RESULTS

Of 300 women who enrolled, 293 participated in both the baseline and follow-up surveys. Table 1 presents select characteristics of the sample. The median age was 28 years (range 18–56) and most had completed at least 10 years of education. Three-quarters reported having been with their main sex partner for a year or more (not shown), and twenty-nine per cent reported having more than one partner in the previous three months. Nearly all participants reported experiencing vaginal discharge at the time of the baseline visit; itching in the genital area and pain during sex or when urinating were also common.

As shown in Table 2, 58% of participants reported intravaginal cleansing in the previous 30 days, and 46% did so during any of the three days before baseline. Many women also reported intravaginal cleansing during all three of the days before baseline. Among those who cleansed in the 30 days before baseline, most (88%) reported doing so for "regular

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hygiene, not related to sex." Ten per cent reported doing so to prevent infection, and most of these (13/17) also reported doing so for regular hygiene. Five per cent reported doing so for sex-related hygiene, and even fewer for such purposes as tightening or drying the vagina. Three-fourths of participants who cleansed reported generally doing so more than once per day.

Soap (usually with water) and water alone (usually freshwater) were the most common products used for cleansing. Few women reported using vinegar, commercial detergents, or commercial douches (Table 3). No participant reported using alum or lemon/lime juice in any of the three time periods. Most women also reported inserting their fingers or a cloth, as part of cleansing. The most common combination of materials used was cloth, with soap and water (*eg* 24%, or 40/166 who reported washing up in the previous 30 days), followed by freshwater and fingers (16%, or 27/166) [not shown]. The materials used in intravaginal cleansing or insertion before the follow-up visit differed from those reported at the baseline visit for the previous three-day or 30-day interval, primarily because of the vaginally-inserted medicines prescribed by clinicians to treat participants' symptoms (*eg*, clotrimazole pessary, metronidazole gel).

Results of multivariable analysis showed that the likelihood of engaging in vaginal cleansing during the previous three days (prior to ACME participants' baseline visit) was positively associated with having had multiple sex partners in the previous three months (adjusted odds ratio [AOR], 1.9; 95% CI, 1.1, 3.2) and negatively associated with experiencing symptoms of itching in the genital area (AOR, 0.6; 95% CI, 0.4, 1.0). It was also positively associated with exchanging sex for money or gifts (AOR, 2.7; 95% CI, 1.2, 6.2); however, because exchanging sex for money or gifts was collinear with having had multiple sex partners in the multivariate model, we opted to show the AOR only for the measure of multiple sex partners.

DISCUSSION

Overall, we found that vaginal cleansing was a common practice among patients at an STI clinic in Kingston, Jamaica, and that it was performed primarily for general hygiene unrelated to sex. This finding is consistent with other studies from other populations in the United States of America (USA), Kenya, South Africa and other settings, which have reported ≥ 40% prevalence of intravaginal cleansing and related behaviours (3, 25–28). The primary products and materials used for cleansing among these participants, namely soap, water, fingers and cloth, also align with findings from other studies (20, 23, 29), though some comparative work highlights wide variation in products used by location (3). The reportedly low use of commercial douches, household detergents, lime or lemon juice, or other more potentially abrasive materials is encouraging. Nevertheless, in a recent meta-analysis of the association between intravaginal cleansing and HIV, use of soap was identified as a risk factor (8).

Other analyses also have not identified many correlates of recent intravaginal cleansing (22, 23, 25, 30). The present and prior studies have found that engaging in transactional sex and having multiple partners are associated with intravaginal cleansing (20, 21, 24). The

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prevalence of intravaginal cleansing has been particularly high in studies of sex-workers (23, 31). The role of RTI or STI symptoms and intravaginal cleansing is ambiguous. Our study found an association (at the 0.10 level) between itching in the genital area and a lower prevalence of cleansing, but Heng *et al* found that itching was associated with a higher frequency of douching (27). Brotman *et al* did not find an association between itching and douching (21). Moreover, Turner *et al* found that STI symptoms were associated with practices reported by women to achieve vaginal tightening, but not those reported by women for cleansing purposes (25). Although educational attainment was not associated with cleansing in this sample, higher educational attainment and socio-economic status have both been associated with lower odds of intravaginal cleansing in other studies (3, 22, 26).

Because the present study population consisted entirely of women seeking treatment for RTI or STI symptoms at a public clinic, the results are not generalizable to the general population of Jamaican women or to asymptomatic women. In addition, because the ACME survey asked women only about “washing up inside the vagina or douching” and did not ask them explicitly about vaginal care practices related to sex, such as practices for the specific purpose of drying or tightening their vagina, our results may have underestimated the percentage of women who engaged in vaginal cleansing for these purposes. Results of previous studies (3, 5, 6, 32) suggest that if the ACME study had included more detailed questions or a more in-depth qualitative research format, women might have mentioned a wider variety of products used for vaginal cleansing, motivations for engaging in vaginal cleansing, and benefits that they perceived to be associated with vaginal cleansing.

Despite these limitations, our documentation of a high prevalence of vaginal cleansing among Jamaican women seeking STI services suggests that their clinicians may need to spend more time providing guidance to them concerning the risks and benefits of vaginal cleansing practices. Until future research clarifies the effects of various kinds of vaginal cleansing on women’s reproductive health, clinicians should be aware that many women practice vaginal cleansing. They should speak with women about why they feel the need to engage in vaginal cleansing and why they prefer particular cleansing practices, and counsel women against practices currently believed to be most damaging, including the use of undiluted commercial detergents.

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REFERENCES

1. Braunstein S, van de Wijgert J. Preferences and practices related to vaginal lubrication: implications for microbicide acceptability and clinical testing. J Womens Health (Larchmt). 2005; 14:424–433. [PubMed: 15989415]
2. Hilber AM, Francis SC, Chersich M, Scott P, Redmond S, Bender N, et al. Intravaginal practices, vaginal infections and HIV acquisition: systematic review and meta-analysis. PLoS One. 2010; 5:e9119. [PubMed: 20161749]

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3. Hull T, Hilber AM, Chersich MF, Bagnol B, Prohmmo A, Smit JA, et al. Prevalence, motivations, and adverse effects of vaginal practices in Africa and Asia: findings from a multicountry household survey. J Womens Health (Larchmt). 2011; 20:1097–1109. [PubMed: 21668355]
4. Redding KS, Funkhouser E, Garces-Palacio IC, Person SD, Kempf MC, Scarinci IC. Vaginal douching among Latina immigrants. Matern Child Health J. 2010; 14:274–282. [PubMed: 19067134]
5. Scorgie F, Kunene B, Smit JA, Manzini N, Chersich MF, Preston-Whyte EM. In search of sexual pleasure and fidelity: vaginal practices in KwaZulu-Natal, South Africa. Cult Health Sex. 2009; 11:267–283. [PubMed: 19173098]
6. Martin Hilber A, Hull TH, Preston-Whyte E, Bagnol B, Smit J, Wacharasin C, et al. A cross cultural study of vaginal practices and sexuality: implications for sexual health. Soc Sci Med. 2010; 70:392–400. [PubMed: 19906477]
7. Brotman RM, Klebanoff MA, Nansel TR, Andrews WW, Schwebke JR, Zhang J, et al. A longitudinal study of vaginal douching and bacterial vaginosis – a marginal structural modeling analysis. Am J Epidemiol. 2008; 15:188–196. [PubMed: 18503038]
8. Low N, Chersich MF, Schmidlin K, Egger M, Francis SC, van deWijgert JH, et al. Intravaginal practices, bacterial vaginosis, and HIV infection in women: individual participant data meta-analysis. PLoS Med. 2011; 8:e1000416. [PubMed: 21358808]
9. Tsai CS, Shepherd BE, Vermund SH. Does douching increase risk for sexually transmitted infections? A prospective study in high-risk adolescents. Am J Obstet Gynecol. 2009; 200:e1–e8.
10. Brotman RM, Ghanem KG, Klebanoff MA, Taha TE, Scharfstein DO, Zenilman JM. The effect of vaginal douching cessation on bacterial vaginosis: a pilot study. Am J Obstet Gynecol. 2008; 198:e1–e7. [PubMed: 18295180]
11. Cottrell BH. An updated review of evidence to discourage douching. MCN Am J Matern Child Nurs. 2010; 35:102–107. quiz 8–9. [PubMed: 20215951]
12. Luong ML, Libman M, Dahhou M, Chen MF, Kahn SR, Goulet L, et al. Vaginal douching, bacterial vaginosis, and spontaneous preterm birth. J Obstet Gynaecol Can. 2010; 32:313–320. [PubMed: 20500937]
13. Grimley DM, Annang L, Foushee HR, Bruce FC, Kendrick JS. Vaginal douches and other feminine hygiene products: women's practices and perceptions of product safety. Matern Child Health J. 2006; 10:303–310. [PubMed: 16555141]
14. Mark H, Sherman SG, Nanda J, Chambers-Thomas T, Barnes M, Rompalo A. What has changed about vaginal douching among African American mothers and daughters? Public Health Nurs. 2010; 27:418–424. [PubMed: 20840711]
15. Figueroa JP, Duncan J, Byfield L, Harvey K, Gebre Y, Hylton-Kong T, et al. A comprehensive response to the HIV/AIDS epidemic in Jamaica: a review of the past 20 years. West Indian Med J. 2008; 57:562–576. [PubMed: 19580238]
16. UNAIDS. Port-of-Span. Trinidad and Tobago: UNAIDS; 2010. The status of HIV in the Caribbean.
17. Andrinopoulos K, Kerrigan D, Figueroa JP, Reese R, Gaydos CA, Bennett L, et al. Establishment of an HIV/sexually transmitted disease programme and prevalence of infection among incarcerated men in Jamaica. Int J STD AIDS. 2010; 21:114–119. [PubMed: 20089997]
18. Norman LR, Uche C. Prevalence and determinants of sexually transmitted diseases: an analysis of young Jamaican males. Sex Transm Dis. 2002; 29:126–132. [PubMed: 11875373]
19. Anderson C, Gallo MF, Hylton-Kong T, Steiner MJ, Hobbs MM, Macaluso M, et al. Randomized controlled trial on the effectiveness of counselling messages for avoiding unprotected sexual intercourse during sexually transmitted infection and reproductive tract infection treatment among female sexually transmitted infection clinic patients. Sex Transm Dis. 2013; 40:105–110. [PubMed: 23321990]
20. Allen CF, Desmond N, Chiduo B, Medard L, Lees SS, Valley A, et al. Intravaginal and menstrual practives among women working in food and recreational facilities in Mwanza, Tanzania: implications for microbicide trials. AIDS Behav. 2010; 5:1169–1181. [PubMed: 20665101]

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21. Brotman RM, Klebanoff MA, Nansel T, Zhang J, Schwebke JR, Yu KF, et al. Why do women douche? A longitudinal study with two analytic approaches. Ann Epidemiol. 2008; 18:65–73. [PubMed: 18063240]
22. Diclemente RJ, Young AM, Painter JL, Wingood GM, Rose E, Sales JM. Prevalence and correlates of recent vaginal douching among African American adolescent females. J Pediatr Adolesc Gynecol. 2012; 25:48–53. Epub 2011 Nov 3. [PubMed: 22051790]
23. Gallo MF, Sharma A, Bukusi EA, Njoroge B, Nguti R, Jamieson DJ, et al. Intravaginal practices among female sex workers in Kibera, Kenya. Sex Transm Infect. 2010; 86:318–322. [PubMed: 20410077]
24. Scorgie F, Smit JA, Kunene B, Martin-Hilber A, Beksinska M, Chersich MF. Predictors of vaginal practices for sex and hygiene in KwaZulu-Natal, South Africa: findings of a household survey and qualitative inquiry. Cult Health Sex. 2011; 13:381–398. [PubMed: 21308576]
25. Turner AN, Morrison CS, Munjoma MW, Moyo P, Chipato T, van de Wijgert JH. Vaginal practices of HIV-negative Zimbabwean women. Infect Dis Obstet Gynecol. 2010
26. Arbour M, Corwin EJ, Salsberry P. Douching patterns in women related to socioeconomic and racial/ethnic characteristics. J Obstet Gynecol Neonatal Nurs. 2009; 38:577–585.
27. Heng LS, Yatsuya H, Morita S, Sakamoto J. Vaginal douching in Cambodian women: its prevalence and association with vaginal candidiasis. J Epidemiol. 2010; 20:70–76. [PubMed: 20009371]
28. Smit J, Chersich MF, Beksinska M, Kunene B, Manzini N, Hilber AM, et al. Prevalence and self-reported health consequences of vaginal practices in KwaZulu-Natal, South Africa: findings from a household survey. Trop Med Int Health. 2011; 16:245–256. [PubMed: 21091859]
29. Alcaide ML, Mumbi M, Chitalu N, Jones D. Vaginal cleansing practices in HIV infected Zambian women. AIDS Behav. 2013; 17:872–878. [PubMed: 22041932]
30. De La Cruz N, Cornish DL, McCree-Hale R, Annang L, Grimley DM. Attitudes and sociocultural factors influencing vaginal douching behavior among English-speaking Latinas. Am J Health Behav. 2009; 33:558–568. [PubMed: 19296746]
31. Penman-Aguilar A, Legardy-Williams J, Turner AN, Rabozakandriana TO, Williams D, Razafindravoavy S, et al. Effect of treatment assignment on intravaginal cleansing in a randomized study of the diaphragm with candidate microbicide. J Womens Health (Larchmt). 2011; 20:187–195. [PubMed: 21314445]
32. Anderson MR, McKee D, Yukes J, Alvarez A, Karasz A. An investigation of douching practices in the botanicas of the Bronx. Cult Health Sex. 2008; 10:1–11. [PubMed: 18038277]

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Table 1

Distribution of select characteristics of ACME study participants, Kingston, Jamaica, 2010–2011 (n = 293)

	Per cent	n
Age (years)		
18–22	22	64
23–27	26	76
28–34	26	75
35+	27	78
Educational attainment (years)		
9 or less	28	83
10	21	61
11	37	109
12+	14	40
Marital status		
Single	29	85
Visiting partner	36	106
Common-law/cohabiting/married	35	102
Symptoms reported at baseline visit		
Itching in the genital area	58	171
Pain during sex or when urinating	45	132
Sore, rash, or warts	19	56
Sexual and reproductive characteristics		
Had > 1 partner during prior 3 months	29	84
Had vaginal sex during prior 3 days	24	69
Received money or gifts in exchange for sex during prior 3 months	10	28
Believed partner had other partners during prior 3 months*	82	216
Used DMPA contraception at the baseline	19	55

ACME = Assessing Counselling Message Effectiveness; DMPA = Depot medroxyprogesterone acetate

*Among those who reported having the same main partner at baseline and follow-up; n = 264, the percentage that reported yes, maybe, or do not know.

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Table 2

Intravaginal cleansing practices, ACME study participants, Kingston, Jamaica, 2011–2012

Prevalence of intravaginal cleansing (n = 292)	**Per cent**
During prior 30 days	58
On any of 3 days prior to baseline	46
On all 3 days prior to baseline	28
Among those who cleansed in previous 30 days, reasons for doing so, (n = 165)*	
Regular hygiene, unrelated to sex	88
Prevent infection	10
Hygiene related to sex	5
Tighten or dry vagina	2
Other reasons (mostly related to menstruation)	8
Among those who cleansed in previous 30 days, reported frequency of doing so, (n = 162)	
More than once a day	74
Once daily	10
Several times a week	4
Once a week	1
Less than once a week	12

ACME = Assessing Counselling Message Effectiveness

*Participants could report more than one reason, so column does not sum to 100.

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Table 3

Products and materials used for intravaginal cleansing, among those who reported cleansing, ACME study participants, Kingston, Jamaica, 2010–2011*

Product or material	Per cent using during prior 30 days (n =166)	Per cent using during 3 days prior to baseline (n = 136)	Per cent using during 3 days prior to follow-up (n = 154)**
Water (freshwater or salt) only	30	31	10
Soap (usually with water)	58	63	19
Vinegar	6	2	7
Medicinal cream	N/A	0	74
Commercial douche or cleanser	4	0	0
Cloth or tissue	48	54	18
Fingers	49	57	20

ACME = Assessing Counselling Message Effectiveness

* Participants could report more than one product or material, so columns do not sum to 100.

** Percentages reflect use of treatments prescribed for STI/RTI symptoms.

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Table 4

Correlates of intravaginal cleansing in the three days before baseline, ACME study participants, Jamaica (n = 293)

Characteristics		Per cent who cleansed	Chi-square *p*-value	Adjusted odds ratio (95% CI)*
Age				
18–22 years		50	0.67	
23–27 years		41		
28–34 years		49		
35+ years		46		
Educational attainment				
9 years or less		47	0.44	
10 years		43		
11 years		51		
12+ years		38		
Marital status				
Single		45	0.79	
Visiting partner		49		
Common-law/cohabiting/married		45		
Symptoms reported at baseline visit				
Genital itching	Yes	42	0.08	0.63
	No	53		(0.39–1.01)
Pain during sex or when urinating	Yes	51	0.18	
	No	43		
Sore, rash, or warts	Yes	52	0.37	
	No	45		
Sexual history				
Had > 1 partner during prior 3 months	Yes	57	0.02	1.91
	No	42		(1.14–3.19)
Had vaginal sex during prior 3 days	Yes	45	0.78	
	No	47		
Received money or gifts in exchange for sex, during prior 3 months	Yes	68	0.02	
	No	44		
Believed partner had other partners, during prior 3 months**	No	54	0.16	
	Yes, maybe, or don't know	43		
Used DMPA contraception, at baseline visit	Yes	44	0.65	
	No	47		

ACME = Assessing Counselling Message Effectiveness; DMPA = Depot medroxyprogesterone acetate

* Model includes only the two variables reported.

** Among those who had the same main partner at baseline and follow-up, n = 264